

## **REMARKS / DISCUSSION OF ISSUES**

Claims 1-8, 10-12 and 14-17 are pending in the application. Claims 1, 10 and 17 are the independent claims.

### **Allowed Subject Matter**

Applicants gratefully acknowledge the indication of allowance of the subject matter of claim 17.

### **Rejections under 35 U.S.C. § 102**

Claims 1,2,4,6,8,10 and 14-16 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by *Harvey, et al.* (U.S. Patent 5,843,539). For at least the reasons set forth below, Applicants respectfully submit that all claims are patentable over the applied art.

At the outset Applicants rely at least on the following standards with regard to proper rejections under 35 U.S.C. § 102. Notably, a proper rejection of a claim under 35 U.S.C. § 102 requires that a single prior art reference disclose each element of the claim. *See, e.g., W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303, 313 (Fed. Cir. 1983). Anticipation requires that each and every element of the claimed invention be disclosed in a single prior art reference. *See, e.g., In re Paulsen*, 30 F.3d 1475, 31 USPQ2d 1671 (Fed. Cir. 1994); *In re Spada*, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Cir. 1990). Alternatively, anticipation requires that each and every element of the claimed invention be embodied in a single prior art device or practice. *See, e.g., Minnesota Min. & Mfg. Co. v. Johnson & Johnson Orthopaedics, Inc.*, 976 F.2d 1559, 24 USPQ2d 1321 (Fed. Cir. 1992). For anticipation, there must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention. *See, e.g., Scripps Clinic & Res. Found. v. Genentech, Inc.*, 927 F.2d 1565, 18 USPQ2d 1001 (Fed. Cir. 1991).

i. Claim 1

Claim 1 recites:

*A mechanical structure comprising a substrate and a layer of an oriented polymerized liquid crystal forming **an element** on said substrate,*

*wherein said element is locally adhered to an adhering region of said substrate and is delaminated from said substrate at a non-adhering region of said substrate, where said adhering region has a higher adhesiveness to the polymerized liquid crystal than said non-adhering region; and*

*wherein the **oriented polymerized liquid crystal of said layer has an anisotropic orientation such as to render the element moveable by non-mechanical means** between a first state having a **first shape** and a second state having a **second shape** different from the first.*

In rejecting claim 1, the Office Action directs Applicants to column 3, lines 10-15 and lines 33-50 of *Harvey, et al.* The portions relied upon relate to fabrication of liquid crystal polymer films and the problems associated with curling due to the fibrillar nature of the polymer. There is no description of rendering liquid polymers movable between first and second states, and especially by non-mechanical means. To this end, the heating of the sheets at column 2, line 64-column 3, line 10 describe the heating and cooling of the sheets and the curling that results due to different coefficients of thermal expansion of surface layers of the sheets. Moreover, annular discs are used to establish biaxial and multiaxial orientation of molecules. As set forth at column 3, and as noted in the response under Rule 111, *Harvey, et al.* discloses at column 3, lines 30-41:

“But, as mentioned above, such a **process forms two layers in the film with complementary orientations, for example +/-45°, on either side of the machine direction in which the extrusion has taken place. As described above, this has led to the drawback of curling in liquid crystal polymer film sheets made from such extruded tubes.** The liquid crystal polymer films become less anisotropic due to the application of transverse shear, but they still curl after cooling, because of the non-uniform CTE phenomenon mentioned above. Curl becomes very significant when the film is orthotropic, i.e., having equal properties in orthogonal directions in the plane of the film, as in a balanced biaxial film.” (Emphasis added.)

Thus, while *Harvey, et al.* discloses the fabrication of two layers with complementary orientations, this is described by the reference as leading to an undesired curling of the liquid crystal polymer, and specifically does not describe **rendering anything moveable by non-mechanical means between a first state having a first shape and a second state having a second shape different from the first; and especially a layer of an oriented polymerized liquid crystal forming the element** on the substrate. Stated somewhat differently, the portion of *Harvey, et al.* to which Applicants are directed for the alleged disclosure of the noted features of claim 1 describe forming layers in a film with complementary orientations; there is no disclosure of rendering an element moveable by non-mechanical means between first and second states having different shapes.

In reply to the “Response to Arguments” set forth on page 2, Applicants respectfully submit that nowhere in column 3 of *Harvey, et al.* is there a description of application of a voltage resulting in the movement of an element between first and second states of first and second shapes. Therefore, Applicants respectfully demur. Accordingly, and for at least the reasons set forth above, Applicants respectfully submit that the applied art fails to disclose at least one feature of claim 1. Therefore, a *prima facie* case of anticipation cannot be made in view of *Harvey, et al.*, and claim 1 is patentable thereover. Furthermore, claims 2 and 4-8, which depend from claim 1, are patentable for at least the same reasons and in view of their additionally recited subject matter.

ii. Claim 10

Claim 10 features, inter alia:

*“A method of manufacturing a mechanical structure comprising a substrate and a layer of an oriented polymerized liquid crystal forming an element on said substrate, wherein **the oriented polymerized liquid crystal of said layer has an anisotropic orientation such as to render the element moveable by non-mechanical means between***

*a first state having a first shape and a second state having a second shape different from the first, said method comprising...”*

The rejection of claim 10 relies on the same portion of *Harvey, et al.* that was relied upon in the rejection of claim 1. Therefore, and for at least the reasons set forth above, Applicants respectfully submit that the applied art fails to disclose at least one feature of claim 10. Therefore, a *prima facie* case of anticipation cannot be made in view of *Harvey, et al.*, and claim 10 is patentable thereover. Furthermore, claims 11, 12 and 14-16, which depend from claim 10, are patentable for at least the same reasons and in view of their additionally recited subject matter.

### **Rejections under 35 U.S.C. § 103**

The rejections of claims 3,5, 7 and 12 under this section of the Code have been considered. While Applicants in no way concede the propriety of the rejections, claims 3,5, 7 and 12 depend from one of claims 1 and 10. As such, claims 3,5,7 and 12 are patentable for at least the same reasons and in view of their additionally recited subject matter.

### **Conclusion**

In view the foregoing, applicant(s) respectfully request(s) that the Examiner withdraw the objection(s) and/or rejection(s) of record, allow all the pending claims, and find the application in condition for allowance.

If any points remain in issue that may best be resolved through a personal or telephonic interview, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

Respectfully submitted on behalf of:  
Phillips Electronics North America Corp.

/William S. Francos/

by: William S. Francos (Reg. No. 38,456)

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Volentine & Whitt, PLLC  
Two Meridian Blvd.  
Wyomissing, PA 19610  
(610) 375-3513 (v)  
(610) 375-3277 (f)